**FLORIDA WATER ENVIRONMENT ASSOCIATION  
STUDENT DESIGN COMPETITION  
2013-2014 GUIDELINES**

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# **2013-2014 GUIDELINES**



This event, sponsored by the Florida Water Environment Association (FWEA), requires that student teams design and present a project of their choice that relates to the field of water/ wastewater engineering, water resources, or other environmental topics. Any questions regarding the program guidelines should be directed to the Students & Young Professionals (S&YP) Committee Chair:

|  |  |
| --- | --- |
| UNIVERSITY\* | S&YP Committee Chair |
| Florida A&M University  Florida Atlantic University  Florida Gulf Coast University  Florida Institute of Technology  Florida International University  Florida State University  University of Central Florida  University of Florida  University of Miami  University of North Florida  University of South Florida | Rebecca M. Oliva, P.E., ENV SP  CDM Smith  1715 N. Westshore Blvd. Suite 875  Tampa, Florida 33607  Work: 813-262-8833  Cell: 813-833-9032  Email: olivarm@cdmsmith.com |

**\***Others Welcome to Participate

**INTRODUCTION**

The FWEA Student Design Competition is intended to promote “real world” design experience for students interested in pursuing an education and/or career in water engineering and sciences. This competition tasks teams of student members within FWEA to design and present a project meeting the requirements of a problem statement that they have worked on together as a team. This competition is intended for both undergraduate and graduate students, typically completing a capstone project.

**STUDENT DESIGN COMPETITION**

Student design teams will be able to compete in one of two categories, wastewater design or environmental design. The Wastewater design is intended to include the traditional wastewater design projects, such as hydraulic capacity design, upgrades to existing systems, biosolids handling, etc. The Environmental design is intended to include the current contemporary engineering topics, e.g. sustainability, water reuse, wetland construction, etc. The students will indicate on the Entry Form the category in which they will participate (WW or ENV). Final determination of project category is at the discretion of the S&YP Chair. The competition consists of two portions, the written submittal and the presentation, which will take place on Sunday, April 6, 2014, in Orlando at the Florida Water Resources Conference ([www.fwrc.org](http://www.fwrc.org)).

The scope and extent of the project should be at the level of a junior, senior, or graduate engineering/science student in a design or capstone course. Students may also participate in the competition if they are not enrolled in a capstone course but prefer to work on the project outside the classroom. Students are expected to work with little assistance from an advisor and/or professor and the students are expected to work together as a team to recommend a solution. Students may use whatever references or resources they choose.

Students are expected to perform the necessary calculations for the project. This is not intended to be solely a research project or a literature review, but a comprehensive design project. Although some initial literature review and/or research will be required, the bulk of the project should incorporate pertinent calculations for the design.

For example, if the project involved a wastewater treatment plant expansion, judges should look that each team performed the following:

* Hydraulic profile
* Preliminary sizing of major equipment (aeration basins, clarifiers, chlorine contact
* chambers, etc.)
* Incorporate information from different manufacturers
* Population analysis to determine design flow rates
* Preliminary cost evaluation
* Decision matrix (provide why you ended up with that particular process or design etc.)

All of the design work should be submitted in the design documentation, clearly labeled and referenced.

Scoring of the project will be determined through an evaluation by judges of the written and oral presentation skills. Written and oral skills will be evaluated separately and the scores will be added for the total score (see Exhibit A for the example judges scoring sheets).

Written data (submitted in electronic format) will be evaluated by the judges prior to the oral presentations. Scores on the written data will not be released until the completion of the oral presentations. The data will be available to the judges during the oral presentation for their reference.

**ENTRY FORM**

Each team shall submit an entry form for the competition. One university is permitted to send up to two teams to the competition, one in each category (wastewater and environmental). The team names shall be referred to in the following manner: University-Category. For example, ABC-WW or ABC-ENV. There is no entry fee for the student design competition. Students and other audience members are responsible for their own travel arrangements to attend the SDC. If interested in attending other portions of the conference, registration information may be found at [www.fwrc.org](http://www.fwrc.org). The team must also submit the Presentaiton Form at a later date that includes the names of team members and presenters.

**PRIZES**

FWEA is providing prizes for the 2014 program. The prizes shown below, which are subject to change each year, will be awarded following the Student Design Competition at FWRC. Please note that each team participating in the event will receive a $500 participation bonus for their team regardless of placement based upon the presentations and written submittals. Students will indicate on the Entry Form where the check should be sent.

|  |  |  |
| --- | --- | --- |
| **PRIZE** | **AWARD** | **MONETARY VALUE** |
| First Place  (Wastewater Design) | Norm Casey Scholarship WEFTEC.14 Travel Allowance\* | $1,000 $4,000 |
| First Place (Environmental Design) | Norm Casey Scholarship  WEFTEC.14 Travel Allowance\* | $1,000  $4,000 |
| All other teams | Participation Bonus | $500 |

\*The first place teams will be required to present their projects at the Water Environment Federation (WEF) Student Design Competition to be held at WEFTEC.14 in New Orleans, Lousiana, September 27 – October 1, 2014. The winning teams from each category (Wastewater and Environmental) should follow the WEF deadlines and guidelines for the national competition, located on their website at <http://www.wef.org/PublicInformation/page.aspx?id=136>.

Note that some items are due on June 2, 2014.

The first place winners in each category will be announced at the conclusion of the Student Design Competition. The Awards presentation will also be held at the Florida Water Resources Conference (FWRC) Awards Luncheon. Team members or designees of the team are encouraged to attend the presentation of award.

**GENERAL REQUIREMENTS**

The general requirements for participation in the competition are:

1. Team size will be limited to a maximum of eight students per team. One team per school is allowed in each design category. It is recommended that schools with more than one team interested in a design category host an internal competition to determine the team who will compete at the FWEA Student Design Competition. A school may send two teams, one in each design category.
2. The sponsoring professor should provide limited assistance to the students on an as needed basis, keeping in mind that this project should be the students’ opportunity to showcase their knowledge gained throughout their time in school.
3. The engagement of the professional community and the local chapters of the FWEA is strongly encouraged. Project topics, design data, and feedback may be obtained from members of the professional community.
4. Attendance at the student design competition at FWRC in Orlando on April 6, 2014.
5. Each member of each team must be a WEF/FWEA Student Member in good standing who:
   1. Is a full-time student (only exception is if they are in their last semester of college)
   2. Has been selected by his/her university to participate
   3. Has been certified by the FWEA as a Student Member in good standing. To be thus certified, a new Student Member must have filed an application and paid the required dues prior to April 6, 2014. The same holds true for continuing Student Members.
6. All entry materials become the property of the FWEA.
7. A representative of the FWEA will preside during the competition and ensure that there is adherence to the time schedule and event rules.
8. The first place team in each category should be prepared to participate in the National Student Design Competition at WEFTEC.14 in New Orleans in October 2014. Some travel funds are provided as part of the first place award.

**WRITTEN SUBMITTAL REQUIREMENTS**

Design documents shall be compiled in Adobe Acrobat (pdf). Competition entries shall be submitted on a CD or by email. Special indices, bookmarks, or other features are appreciated, but not required.

The following shall be included in the written submittal (in the order shown):

1. **Abstract/ Executive Summary** – Provide a brief overview/ summary of the design, not to exceed 200 words. This section is not counted as part of the 20-page limit.
2. **Team Member Roles**– Provide a summary of each team member’s role in the effort. This section is not counted as part of the 20-page limit.
3. **Report-** A discussion of the design problem statement, approach, and solution (not to exceed 20-pages\*). The discussion must cover the salient facts upon which the recommendation is made, give a clear analysis of the evaluation technique, and present a clear recommendation of action. Relevant data should be presented in the discussion in a clear form. All elements shown on the judging form should be addressed.
   1. Formatting: 1-inch margins on all sides; Calibri, Arial, or Times New Roman Font with a minimum 11-point font size. Reports may be single or double-spaced.
   2. Color diagrams, tables, graphs, charts and photographs that reflect the unique features of the project. Each graphic/photo is to be identified with an appropriate descriptive caption and may be embedded in the report or included at the end in appendices.

\*Noncompliance may result in scoring penalties (see Judges and Judging Criteria).

1. **References/Acknowledgements-** Give credit to your sources of information and outside support. This portion does not count as part of the 20-page limit.
2. **Supporting Documentation** – Provide drawings, calculations, tables, vendor submittals, cost estimates, and other voluminous documents, as appendices. There is no limit on the number or length of appendices to include at the end of the report. This portion does not count as part of the 20-page limit.

**PRESENTATION REQUIREMENTS**

Each team will be allowed a thirty (30) minute block of presentation time. It is recommended that the time be used to make a two (2) minute setup, twenty (20) minute presentation directly followed by an eight (8) minute question and answer session. There will be time warning signs held up during the presentation when there are 5 minutes and 1 minute remaining to help the students from going over their time allotment. To stay on schedule, the presentation will be kindly cut off after 20 minutes, even if there are slides remaining. Therefore, time management and practice are important. There will be two rooms for the presentations, one for the Wastewater Category, and one for the Environmental Category. Both SDCs will occur simultaneously.

Each team may have up to five members on their presentation team, one of whom will provide audio-visual services only (non-speaking role). If additional members of the team attend, they may not speak during the presentation or question and answer period, but are encouraged to show their support as an audience member. All presenting team members (excluding the A/V member) are encouraged to participate in the question and answer session. Questions are drawn from the judging panel. The presentation rooms will have a standard podium, screen, laptop, and projector. The laptop supports PowerPoint 2007.

**SIGNIFICANT SUBMITTAL ITEMS AND DATES**

Each entry will consist of the following:

1. An official **Entry Form** submitted to the S&YP Chair by **January 17, 2014**. This submittal does not need to identify team members, but must include contact data for each team planning a submittal.
2. A **Participation Form** showing final team member names and roles, submitted to the S&YP Chair by **March 26, 2014**.
3. A project written data submittal must be received by the S&YP Chair no later than **March 26, 2014**.
4. The presentations will be made on **April 6, 2014** in Orlando at the Florida Water Resources Conference. The S&YP Chair needs to receive the final presentation on the morning of the competition to check for technical difficulties prior to the start of the competition. Teams will need to verify that their presentation is on the general laptop on the morning of the competition. Students may bring their presentations on a portable flash drive to transfer it to the general laptop.

**JUDGES AND JUDGING CRITERIA**

The event will be judged by an impartial panel consisting of members of academia, public agencies and private consulting practices. The judging team shall have no direct afflialtion/representation with any college participating, owner project, or engineering firm involved as part of the projects they will be judging. All written submittals and presentations will be judged by the same panel of judges for each category, Wastewater and Environmental.

The FWEA is a multi‑disciplined environmental organization dedicated to quality in practice of the profession. Accordingly, judging will be based on the elements outlined below and on the score sheets provided in Exhibit A. Judges will use the scoring sheets provided as the basis for judging of the students’ designs. The FWEA presiding official will hold the results of the written submittal scores until after the presentations are complete and scored. The score sheets will be collected after the presentation and the scores will be added to the written scores and tallied. The team with the highest score in each category will be awarded First Place. In the event of a numerical tie, the winner will be decided by the scoring of the presentations. If this ranking also results in a tie, a coin shall be flipped to determine the first place finishers (and state representatives to WEFTEC.14). The final scores may not be released, however comments and feedback from the judges may be compiled then provided to the students upon completion of the Student Design Competition.

**Format**

Were the instructions followed in the delivery of the written data? Was the appearance of the data and presentation materials neat, organized, and professional? Does this submission substantially conform to the guidelines? Is the written submittal clear, easy to read and navigate? Is it free of grammatical and spelling errors?

**Content**

To what extent was the subject of interest conveyed to a technical audience? Did the team give credit for source of material or contribution? How much knowledge of subject was exhibited? Was work independent and original? Was subject technical or general in nature? Was the approach effective in solving the problem statement? Was the problem clearly stated? Did the students present a viable solution to the problem? Was there any innovation or “thinking outside the box” on the design approach? Were the design challenges addressed and overcome?

**Organization**

Was there any novel approach to the subject? Was there sufficient background information provided to introduce the audience to the subject? Were facts developed in logical and continuous sequence? Was there a definite conclusion and was it adequately based on the facts or data presented? Did the report stay within the page limit? Was the report broken down into sub-headings that made it easy to follow?

**Delivery and Effectiveness**

Were the words distinctly pronounced and did presenter use proper volume in delivery? Did the contestant use proper English, and was the vocabulary sufficient? Was personal appearance appropriate? Were there any distracting mannerisms? Was the manner of delivery (conversation, memorized, read from manuscript) satisfactory? If visual aids were used, how effectively were they used? Was the presentation within the time limit allowed for presentation?

**Discussion**

Did the presentation evoke spontaneous questions from the panel? Did questions indicate the need for clarification of facts presented or were they merely of the type seeking additional information? How readily and with what self‑assurance did the speaker answer questions? Did the answers indicate knowledge of subject beyond that disclosed in the original presentation?

**INTERNET LINKS**

<http://www.fwea.org/student_design_competition.php>

[www.fwea.org](http://www.fwea.org)

[www.fwrc.org](http://www.fwrc.org)

**QUESTIONS OR COMMENTS**

Please review the entire SDC Guidelines and contact the Students and Young Professionals Committee Chair for any clarification on any of the rules or guidelines of the program. The Chair may be contacted at:

Rebecca M. Oliva, P.E., ENV SP

CDM Smith

1715 N. Westshore Blvd. Suite 875

Tampa, Florida 33607

Phone: 813-262-8833 (leave a message or call my cell)

Cell: 813-833-9032

Fax: 813-288-8787

Email: olivarm@cdmsmith.com

Good luck and thank you for your interest and support!

EXHIBIT A

SAMPLE JUDGES’ SCORING SHEETS

2014 STUDENT DESIGN COMPETITION



**SCORING SHEET – WRITTEN REPORT**

**University:**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Title of Presentation:**

**FORMAT**

**SCORE**

***Followed Instructions:* All sections included, in proper order**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Appearance:* Neatness, organization, professional experience**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

**PROJECT DESCRIPTION**

***Grammar/Spelling:* Description is free from grammatical and spelling errors**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Project Knowledge:* Demonstrates understanding of background, meets objectives with**

**use of facts, not supposition**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Continuity:* Essential facts, organized in logical and clear sequence**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Acknowledgements:* Sources of information and participants’ roles identified**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Conclusion:* Conclusions/recommendations are clearly drawn and presented**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

**SUPPORTING DOCUMENTATION**

***Photos/Figures:* Relevant to project and description with concise captions**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Organization:* Easily located and referenced to/from text**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Visual Aids:* Legibility and effectiveness are apparent**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

**GUIDELINES**

**Does this project conform to the Student Design Guidelines?**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

**TOTAL SCORE**

2014 STUDENT DESIGN COMPETITION



**SCORING SHEET – PRESENTATION**

**University:**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Title/ Subject of Presentation:**

**CONTENT**

**SCORE**

***Subject Matter:***

General Technical

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Contribution:***

Library Research Independent Innovative

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Knowledge of Subject:***

Little Complete

(circle one) 0 1 2 3 4 5 6 7 8 9 10

**ORGANIZATION**

***Introduction:* Background, objectives, outline are clearly presented**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Continuity:* Facts presented in logical sequence, transitions well**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Conclusion:* The conclusion is given, and is reasonable from the presentation**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

**DELIVERY EFFECTIVENESS**

***Schedule:* Teams made effective use of the time budget, ample time for**

**discussion/questions**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Organization:* Conversational vs. monotone, proper volume, proper diction,**

**timing of discussion matches presentation**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Body Language:* Good eye contact, no distracting mannersisms, good motion**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

***Visual Aids:* Visuals were clear, free of clutter, related to discussion items**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

**OPEN DISCUSSION**

***Question & Answer:* Clear delineation of expertise, answers reflect true knowledge**

Poor Excellent

(circle one) 0 1 2 3 4 5 6 7 8 9 10

**TOTAL SCORE**